SECTION B

MAPPING OF USER SERVICES TO IVHS TECHNOLOGIES

MAPPING OF USER SERVICES TO IVHS TECHNOLOGIES

USER SERVICE	Veh. Probe	Loop	Infrared									
USER SERVICE		Det.	Sensors	Microwave & Radar Sensors	Machine Vision	Aerial Surv.	Auto. Veh. Ident.	Weigh -in- motion	Auto. Veh. Class	Auto. Veh. Loc.	Police/ EMS/Other Info. Proc.	Weather & Other Env. Info.
Fraveler Information (Multimodal)	X	×	x	x	×	×						X
Traveler advisory			ì							Ì		
Traveler service information			İ							l	<u>'_</u>	_
Crip planning	x	X	x	x	X	X					x	X
Location displays Route selection	_	_		x	x	x	ĺ					
Route selection Route guidance	X	X	x	, x	,	^			ł	ļ		
in-Vehicle signing			l			ļ i		İ			<u> </u>	x
in- veruete signing			ì						ļ			1
Iraffic Management			ţ		}		{	<u> </u>	,	1	1	
Incident detection & Management	x	x	x	x	x	x	}]		Ĭ	x	
Demand management	-		}				i	1	İ '			
Fraffic network monitoring	x	x	x	x	x	x	x	x	x		x	x
Traffic control (Adaptive strat.)	1	x		}	×		İ		1		x	
Parking management	1	X	x	ĺ			х]	X	x		l
Construction Management			1	1	Ì		1			Ì	×	
Electronic Toll collection	1						X		x	Į		
Freight & Fleet Management			}]	}	Ì		l	l	1	
rreignt & rieet Management Inter-modal transport planning	1]	İ						l	l	ļ	1
Route planning & scheduling	1		1]	ļ		x			x		
HAZMAT monitoring & tracking		1	Ì	ĺ	ł		x	ļ	l x	x	ļ	x
Vehicle & cargo monitoring	}		x	x			x	x	x	x		×
Law Enforcement		1	i -	[ļ		x		<u> </u>	x	x	
Regulatory support						1	x	×	×	×	1	
	1	1		ţ]
Pub. Trans. & Emer. Veh. Management	1	1			}	,	İ	[· ·		
Planning & scheduling system	x	x	x	x	x		1		Ì	x	1	
Signal pre-emption traffic control				•				1		1		
Automatic payment (Fleet, fares)		.	1	}	.		X]		1		Y# + 27
Dynamic ride sharing			1	١.	l _		_]	l .		
Prediction of arrivals Emergency serv, sys, management	1				X]	X			, X	x	

	TRAVELER INTERFACE										
USER SERVICE	Touch Screen	Keypad/ keyboard	Voice recognition	Voice output	Visual display	Heads up display	Variable Message signs				
Traveler Information (multimodel)											
Traveler advisory				x	x	x	[x				
Traveler service information	x	x	x		x						
Trip planning	х	x	x	x	x	x	}				
Location displays			ļ		×	x					
Route selection	x	×	x		1 1						
Route guidance		ł		x	, x	x					
In-Vehicle signing			ļ	x	x	x					
Traffic Management	1		İ		1						
Incident detection & management		{									
Demand management	i				}		X				
Traffic network monitoring)									
Traffic control (adaptive strat.)	-	1				17,7	1				
Parking management	x	x			_	_					
Construction management	.) ^	, ^		X X	x	X X ··· "					
Electronic Toll collection				^	" [х .	X				
		1									
Freight & Fleet Management	2.2. 11] .			. ^	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				
Inter-model transport planning		İ				•	. ""				
Route planning & scheduling	*	x			1.15		entre la seguir de la co				
HAZMAT monitoring & tracking		l									
Vehicle & cargo monitoring		j				*:					
Law enforcement	ļ				1		1				
Regulatory Support	" "					٠					
Militaria de Caracteria de Car		l]								
Public Trans. & Emer. Veh. Management		1			· · · · · ·		Ÿ.				
Planning & scheduling systems Signal pre-emption traffic control	X	×			x						
Automatic payment (Flex. fares)											
Dynamic ride sharing					1 , 1		1				
Prediction of Arrivals	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	X		x	*						
	X • 1. (Vol. vol. + <u>V</u> . 16x 15	X		X	X]				
Emergency serv. sys. management	<u> </u>	Lius duri X da regetês	RANKER CALLEGACE	🔭	zdani Ny≆ine ≭ - Asianah	พิสตินสิน พ.ศ. เลิมพาศทั้งที่	Militaria de la calcada de calcada de la compaña de la compaña de la compaña de la compaña de la compaña de la				

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	NAVIGATION / GUIDANCE											
USER SERVICE	Position display	Guidance display	Map database	Dead reckoning	LORAN	GPS	Map matching					
Traveler Information (multimodel)					, , , , , , , , , , , , , , , , , , , 							
Traveler advisory	x			1			ŀ					
Traveler service information	x											
Trip planning	x	x	x				1					
Location displays	x		×	×	x	×	i x					
Route selection			1			ł	1					
Route guidance	x	x	x	x	×	*	x					
In-Vehicle signing	x	x					ĺ					
Traffic Management						1.						
Incident detection & management	7		1			1						
Demand management						1						
Traffic network monitoring						ŀ						
Traffic control (adaptive strat.)						1	1					
Parking management	x		x									
Construction management						İ	1					
Electronic Toll collection												
Freight & Fleet Management												
Inter-model transport planning	-1					İ]					
Route planning & scheduling	x		x	x	×	×	*					
HAZMAT monitoring & tracking	x		x	x	x) x	x					
Vehicle & cargo monitoring	x		x	×	×	* *	X X					
Law enforcement						1						
Regulatory Support							ļ.					
Public Trans. & Emer. Veh. Management												
Planning & scheduling systems	7		İ			1						
Signal pre-emption traffic control] '		1									
Automatic payment (Flex. fares)]					1	ļ					
Dynamic ride sharing	- I					1 "	. : " .					
Prediction of Arrivals			x	x	, x	x	x					
Emergency serv. sys. management	T	X	<u> </u>	x	.	. x	1 x					

	DATA PROCESSING										
USER SERVICE	Coupleted rt. sel. & traff. control	Database static	Database dynamic	Route sel. alg.	Driver/ veh./cargo sched.	Real-time traffic pred.	Assign sign.	Route guidance alg.	Data Fusion tech	Opt. control strat.	Inc. detec. sig.
Traveler Information (multimodal)										•	
Traveler advisory			x		į				x		
Traveler service Information		x	x						x		
Trip planing		x	x						x		
Location displays						1		1	į	·	
Route selection	x	x	x	x		x		İ	x	1	
Route guidance		X	x			1		X		j	•
In-Vehicle signing		ł			İ	1		ļ	1]	
Traffic Management					<u> </u>						ŀ
Incident detection & management	x	x	x			1		İ	x	x	x
Demand management	^	l x	<u> </u>	l	Į.			l	_	Î	^
Traffic network Monitoring		x	x	ļ		1		1	l x	_	1 x
Traffic Control (Adaptive strat.)	×	x	x	×		x ·	* * *		_		y
Parking Management	_	x	x					1			· ·
Construction Management	:		×	1		i			x		
Electronic Toll Collection							! 				
Freight & Fleet Management								}		,	
Inter-model transport planning		x	x	x	x				1		
Dauta alandan & sakaduling	ļ.		x	x	x	x x	x	· .	:	\$ % · ·	
HAZMAT monitoring & tracking			x			ł			x	1	l
Vehicle & cargo monitoring	l		x			İ			*		
Law enforcement	l]		
Regulatory support				ŀ							
Pub. Trans. & Emer. Veh. Management	1			ļ							
Planning & scheduling systems			X	x	x	x	x	x			1
Signal pre-emption traffic control			1	Į.		1		1		l . ·	
Automatic payment (Flex, fares)			1	1			1	1			1
Dynamic ride sharing			×	1		1	x	1.	1	1.00	
Prediction of arrivals		x	x			x		1			1
Emergency serv. sys management	1. 18 18 18 18 18 18 18 18 18 18 18 18 18		L : 1 2 %	. x	Santa 🛈 🗆	A La de	l e do ¥ table	la 🖈 🎎	J	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

	IN-VEHICLES SENSORS										
USER SERVICE	Equipment status Sensors	Vehicle headway sensors	Odometers	Electronic compass	Driver fatigue & performance monitoring						
Traveler Information (multimodel)											
Traveler advisory			}								
Traveler advisory Traveler service information			{								
Trip planning			į	}							
Location displays				1							
Route selection	i i		×	l x							
Route guidance			1	<u> </u>	ľ						
In-Vehicle signing	x	x	x	x	x						
Freight & Fleet Management											
Inter-model transport planning				{							
Route planning & scheduling											
HAZMAT monitoring & tracking	x	x	x	x	x						
Vehicle & cargo monitoring	x	x	x	x	x						
Law enforcement			ĺ	ĺ							
Regulatory Support					x						
Public Trans. & Emer. Veh. Management											
Planning & scheduling systems											
Signal pre-emption traffic control											
Automatic payment (Flex. fares)]								
Dynamic ride sharing				· ,	1						
Prediction of Arrivals			x	x							
Emergency serv, sys. management				Kora a sasara	Service Construction						

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[COMM. With	in infrastructure			VEHICLE TO VEHICLE		
USER SERVICE	Land lines	Microwave	Wide-area Radio System two-way	Satellite two-way		Microwave	Wide-areaa radio system two-way	
Traveler Information (multimodel)								
Traveler advisory	x	x	x	x		x	x	
Traveler service information	x			1		_	, ,	
Trip planning	X	x	\ x	l x		x	×	
Location displays				1		-	Î	
Route selection	x							
Route guidance		1	ł	Ì				
In-Vehicle signing	x					x	x	
Traffic Management			1	1		•		
Incident detection & management	X.	¥				x	· ·	
Demand management		_		ĺ		*	*	
Traffic network monitoring	*	*	x	. x		· ·. ·		
Traffic control (adaptive strat.)	x		x	1 -				
Parking management			-	1				
Construction management	x	1 x	x	x		• • • • •		
Electronic Toll collection	X.							
	•							
Freight & Fleet Management		1		}				
Inter-model transport planning	X	ľ						
Route planning & scheduling		j	1	Ì.		t a set		
HAZMAT monitoring & trucking	• Х	ľ		1	-		• • •	
Vehicle & cargo monitoring			1					
Law enforcement Regulatory Support	x		'			X	×	
Public Trans. & Emer. Veh. Management	,					· .		
Planning & scheduling systems	x	· x						

	CONTROL STRATEGIES									
USER SERVICE	Ramp Metering	HOV restriction	Signal control	Parking restriction	Ramp / lane closures	Road use pricing	Reversible lanes			
Traffic Management										
Incident detection & management		x	x		x 1					
Demand management	x	x	x	x	I	*	l î			
Traffic network monitoring							^			
Traffic control (adaptive strat.)	x	x	x	x		¥	1			
Parking management		Ì			•	-	1 *			
Construction management			x	x x						
Electronic Toll collection					- 1	*	ĺ			
Public Trans. & Emer. Veh. Management						^	1			
Planning & scheduling systems				ł						
Signal pre-emption traffic control			x							

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